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Was Arthur Andersen Different? An Empirical Examination of Major Accounting Firm Audits of Large Clients

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Enron and other corporate financial scandals focused attention on the accounting industry in general and on Arthur Andersen in particular. Part of the policy response to Enron, the criminal prosecution of Andersen eliminated one of the few major audit firms capable of auditing many large public corporations. This article explores whether Andersen's performance, as measured by frequency of financial restatements, measurably differed from that of other large auditors. Financial restatements trigger significant negative market reactions and their frequency can be viewed as a measure of accounting performance. We analyze the financial restatement activity of approximately 1,000 large public firms from 1997 through 2001. After controlling for client size, region, time, and industry, we find no evidence that Andersen's performance significantly differed from that of other large accounting firms.

This article is about accounting firm performance and its implications for the state of product differentiation and corporate governance in the accounting industry. We investigate whether a serious sign of accounting error, the substantive restatement of earnings by large publicly held com-

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panies, which are discovered by the issuer, the Securities and Exchange Commission, or third parties, occurs with similar frequency across the major accounting firms, or whether restatements tend to be isolated in particular miscreant firms, particularly the late Arthur Andersen (Andersen).

Some of the governmental responses and initiatives to the wave of Enron-style corporate collapses reflect the view that Andersen, Enron's auditor, was an outlier among accounting firms. Other government actions, however, reflect the view that the major accounting firms are more or less the same. For example, Andersen's internal corporate governance, monitoring, and control systems may have been weak relative to those of the other large accounting firms, and this lack of internal controls may have made Andersen particularly vulnerable to "capture" by unscrupulous clients. Alternatively, it may be the case that all large accounting firms are similar in the sense that all are equally susceptible to internal corporate governance problems, and all have, more or less, the same quality of internal controls. If so, then all firms should be equally susceptible to the possibility that client firms will capture the teams of auditors assigned to prepare financial statements and cause these accountants to acquiesce in inappropriately aggressive accounting treatment, or even to pro-actively participate in the design of materially misleading accounting statements.

The stakes of accurately describing Andersen's performance are high. Remarkably few large accounting firms audit many large public corporations. Removing a major firm from such a thin market has implications for the public securities markets as well as for the accounting industry. Independent of Andersen's particular performance, the stakes of understanding the pattern of financial restatements are also high. Restatements have been shown to trigger substantial drops in restating firms' market value. Examining restatements, which reflect on the quality of a major product of accounting firms—their public company audits—may also foster insights about the relation between large companies and their auditors and about the internal governance of auditors.

Analysis of about 1,000 large public firms from 1997–2001 yields no evidence that accounting profession problems that lead to restatements were unique to Andersen. Andersen's clients did not restate their financial results at a significantly different rate than the other major accounting firms during this period. During the period of our study, private plaintiffs and government regulators began to focus more intensively on accounting irregularities and the percentage of public companies restating their financial results

increased dramatically. Interestingly, however, we do not find a significant rise in Andersen's share of the increased number of restatements. Rather, the distribution of restatements among the largest accounting firms remained roughly the same.

Thus, by the restatement-rate measure, the vilified and now-defunct Andersen was not objectively different from the other major accounting firms. If financial restatement rates are a key measure of audit firm performance, or if other measures of performance yield similar results, one may question the government's decision to end Andersen's existence by bringing criminal charges against it. Our findings also call into question the value of market competition in generating successful product differentiation. Our results do suggest that the accounting reforms implemented by the Sarbanes-Oxley Act of 2002, which apply to all accounting firms, can be defended on the ground that accounting profession problems are industrywide and not linked to any particular firm.

To the extent that financial restatement rates capture an important component of accounting firm quality, we find little evidence that the top accounting firms compete with one another on the basis of quality.

Part I of this article discusses the law and economics of accounting and provides the relevant background to our analysis. Part II describes the data and reports the empirical results. Part III discusses the results. A conclusion follows.

I. THE LAW AND ECONOMICS OF ACCOUNTING

A. The Paradigm

The law and economics literature has a simple and elegant explanation for the importance of independent accounting firms.[1] Generating information about financial results is important for internal as well as external reasons.

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[1]The classic article is Ross L. Watts & Jerold L. Zimmerman, Agency Problems, Auditing, and the Theory of the Firm: Some Evidence, 26 J.L. & Econ. 613 (1983); see also Sung K. Choi & Debra C. Jeter, The Effects of Qualified Audit Opinions on Earnings Response Coefficients, 15 J. Acct. & Econ. 229 (1992); Rick Antle, Auditor Independence, 22 J. Acct. Res. 1 (1984); George J. Benston, Accountant's Integrity and Financial Reporting, Financial Executive 10 (Aug. 1975).

Management needs to know how the firm is performing, and therefore needs accurate, reliable information on financial performance. However, all the information management needs can be (and is) generated by firms internally. Demand for the services of independent outsiders to audit this information exists because firms need a credible signal that they can send to outside investors that the financial results being reported are, in fact, accurate.

Thus, outside auditors do not perform any services for a company that the company does not already perform for itself. The role of the auditor is not to prepare financial reports for clients (that is the role of the accountant). Rather, the auditor's role is to provide a reliable verification of the company's financial reports.

Thus, auditors' reputations are central to the standard economic theory of auditing. Only auditors with reputations for honesty and integrity are valuable to audit-clients. The idea is that, absent a reputation for honesty and integrity, the auditor's verification function loses its value. In theory, then, auditors invest heavily in creating and maintaining their reputations for performing honest, high-quality audits. High-quality audits by independent auditors who have good reputations are assured. The quality assurance is derived from the fact that performing poor-quality audits diminishes the value of the audit firm's investment in reputation.[2]

The pre-Enron law and economics view of the accounting industry predicted that accounting firms compete in a "race-to-the-top" that provides them with incentives to strive to produce high-quality audits.

> There was a time that the audit function was carried out in a market environment that induced high quality financial reporting. In that era, accounting firms were willing to put their seal of approval on the financial records of a client company only if the company agreed to conform to the high standards imposed by the accounting profession. Investors trusted accountants because investors knew that any accounting firm that was sloppy or corrupt could not stay in busi-

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[2]Brian W. Mayhew, Auditor Reputation Building, 39 J. Acct. Res. 599 (2001); Brian W. Mayhew, Jeffrey W. Schatzberg & Galen R. Sevcik, The Effect of Accounting Uncertainty and Auditor Reputation on Auditor Objectivity, Auditing: A Journal of Practice & Theory 49 (Sept. 2001); Norman Macintosh, Teri Shearer, Daniel B. Thornton & Michael A. Welker, Financial Accounting as Simulacrum and Hyperreality: Perspectives on Income and Capital, Accounting, Organizations and Society 13 (Jan. 2000); Ronald R. King, Reputation Formation for Reliable Reporting: An Experimental Investigation, 71 Acct. Rev. 375 (1996); Watts & Zimmerman, supra note 1; Antle, supra note 1; George Benston, The Value of the SEC's Accounting Disclosure Requirements, 44 Acct. Rev. 515 (1969).

ness for long. Auditors had significant incentives to "do superior work" because "auditors with strong reputations could command a fee premium, and high fees signaled quality in the auditing market."[3]

High-quality audit services were further assured by the audit firms' independence from their clients, where independence is measured by the percentage of an audit firm's billings that are derived from a particular client.[4] In a world in which auditors have both invested in developing high-quality reputations and in which no single client represents more than a tiny fraction of total billings, high audit quality seems assured. Under these conditions, any potential gain to an auditor from performing a shoddy audit, much less from participating in a client's fraud, would be vastly outweighed by the diminution in value to the auditor's reputation.

In sum, even though companies can (and do) audit themselves, they can justify the expense of hiring outside auditors to enhance their financial reputation and credibility with a wide range of current and prospective claimants on their cash flows, including investors, suppliers, customers, and prospective employees. Under this reputational model, companies need independent audits to attract outside capital because it is widely believed that an auditing firm that discovers a problem would insist on a correction or, ultimately, fire the client. Being fired by an accounting firm has serious implications for the client.[5] The accounting firm that dismissed the audit-client, however, would lose only that client, and even this loss could probably be offset as the accounting firm might well gain new clients by virtue of the enhancement of its reputation that followed from firing the client.

So, even though companies can and do impose their own financial controls and audit themselves, they hire outside auditors to capitalize on the

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[3]Jonathan Macey & Hillary Sale, Observations on the Role of Commodification, Independence, and Governance in the Accounting Industry, 48 Villanova L. Rev. 1167, 1168 (2003).

[4]For example, Andersen was said to be independent of Enron because Andersen had 2,300 other audit-clients, and Enron accounted for only about 1 percent of Andersen's total revenue from auditing (Andersen's Enron's revenues were reported in 2001 as $100 million as compared to $9.34 billion in 2001 audit revenue). Id. at 1176 n.33. Of course, Andersen's independence as a firm did not extend to the partners responsible for doing the actual audit work for Enron. Id. at 1168.

[5]See, e.g., Martin Fackler, How Auditors Got the Nerve to Defy Big Japanese Bank, Wall St. J. Aug. 6, 2003, at A1 (describing how auditors' failure to sign off on financial projections of a large Japanese bank caused a crisis that forced the bank to seek a $17 billion government bailout that put the financial institution under government control).

audit firm's reputation. Hiring an auditor, at least in theory, allows the client company to "rent" the reputation of the accounting firm, which rents its reputation for care, honesty, and integrity to its clients. This, in a nutshell, is the economic theory of the demand for the services of independent auditors.

In theory, then, accounting firms are willing to put their seal of approval on a company's financial records only if the company agrees to conform to the high standards imposed by the accounting profession. Investors trust accountants because investors know that any accounting firm that is sloppy or corrupt could not stay in business for long. The long-term loss to the reputation of an independent accounting firm that does slipshod or fraudulent work is much greater than any possible short-term gains the accounting firm might get by cutting corners. Companies that refuse to comply with the auditors' demands for transparency and simplicity in reporting risk being dismissed by their auditors. Being fired by an accounting firm sends a negative signal to investors that often both devastates a company and leads to the dismissal of top management. Outside audits send a strong signal to investors that the company's financial house is in order.

From the perspective of audit firms' clients, good audits are good investments because they reduce the cost of capital and increase shareholder wealth. Good audits also increase management's credibility among the investment community. In theory, the capital markets audit the auditors.

> Public accountants knew they had a lot to lose if their clients' information turned out to be false or misleading. Auditors who did a superior job would reduce the chance of their clients' issuing unreliable information and so reduce their own risk of being sued by aggrieved investors. Such suits are costly to auditors; even unsuccessful suits damage their valuable reputations.[6]

B. What Went Wrong?

It is generally thought that something went very wrong in the accounting profession. Several factors may have contributed to a decline in audit quality. The shift of organizational form from the general partnership form to the limited liability partnership form reduced the threat of liability faced by

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[6]Daniel B. Thornton, Financial Reporting Quality: Implications of Accounting Research, Submission to the Senate (Canada) Standing Committee on Banking, Trade and Commerce, Study on the State of Domestic and International Financial System (May 29, 2002).

audit firm partners not directly involved in auditing a particular client. This, in turn, may have resulted in a diminution in the incentives of accounting firm partners to monitor the performance of their colleagues. The removal of aider and abettor liability risk also may have, at the margin, reduced auditors' incentives to monitor one another,[7] a reduction in incentives that was exacerbated in 1995 by passage of the Public Securities Litigation Reform Act (PSLRA).[8]

These changes may have been exacerbated by the increasing complexity involved in performing audits. Auditing became more complex as new and more sophisticated methods of financing proliferated and as the audit rules themselves became more technical and complex. As a consequence, audit firms that were engaged by large public companies found that the "audit engagement teams" they assigned to perform audits had to spend increasingly large percentages of their time performing audit services for that client. Thus, for example, the head of Andersen's Enron audit team spent 100 percent of his time on the Enron account.[9] This, in turn, led to the capture of auditors by their clients, since auditors' careers increasingly came to depend entirely on the "care and feeding" of single clients. Thus, just as the danger of client "capture" of auditors was increasing, the incentives of accounting firms to develop internal corporate governance struc-

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[7]Central Bank of Denver v. First Interstate Bank of Denver, 511 U.S. 164 (1994) (holding that § 10(b) and SEC Rule 10b-5 prohibit only "the making of a material misstatement (or omission) or the commission of a manipulative act" and do not prohibit the aiding and abetting of such acts). This decision was thought to have alleviated substantially the legal risks to outside advisors such as auditors and lawyers.

[8]Pub. L. No. 104-67, codified in various parts of Titles 15 and 18 of the U.S. Code, §§ 101–109. The PSLRA established new rules of pleading that require plaintiffs' complaints to "state with particularity all facts giving rise to a strong inference that the defendant acted with the required state of mind" when making a misstatement or omission in financial reporting. The PSLRA also delayed the beginning of discovery until after a court has decided whether to allow the case to go forward on the basis of the heightened pleading standards. Prior to passage of the PSLRA, plaintiffs' attorneys could begin to gather documents and interview witnesses as soon as their complaint was filed. The PSLRA also sharply limited the doctrine of "joint and several liability," which ensures that victims can recover full damages even if one or more of the parties to the fraud cannot pay. Under the PSLRA, those whose reckless misconduct contributes to the fraud can be held responsible for only their proportionate share of victims' losses. As a result, when the primary perpetrator of the fraud is bankrupt, investors cannot fully recover their losses from other entities, such as accounting firms.

[9]Macey & Sale, supra note 3.

tures to combat capture may have been decreasing due to the passage of statutes providing limited liability to accounting firm partners.

The danger of client capture appears to have been further exacerbated by the growth in the provision of highly profitable consulting services by auditors. If the consulting services accounting firms offer to their audit-clients have higher profit margins than the auditing services, accounting firms will be tempted to use auditing work either as a loss leader or as a mechanism for "'opening the door' with a client for the purpose of pitching their (higher margin) consulting services."[10] Providing consulting services further erodes auditor independence by shifting the balance of power away from the auditor and in the direction of the audit-client when auditors are discussing audit work and retention issues. Worse, consulting services provide a means by which audit-clients can reward auditors for succumbing to the client's wishes about what accounting treatment should be used to report novel or complex transactions and business practices.[11]

Where auditors offer clients only audit services, the client's only option is to fire the auditor if the client does not think that the auditor is being sufficiently aggressive. But when the accountants also are peddling consulting services, the client can employ a "carrot and stick" strategy that rewards the accounting firm for being compliant and punishes the firm for being inflexible. This pressure is particularly acute in an environment in which the firm is the only client of the engagement partner from the accounting firm that is performing the audit, since a partner's inability to procure lucrative consulting work would be reflected in the salary, promotion, and bonuses of the partner.

As John Coffee has observed, it is difficult for an audit-client to fire its auditor because such dismissals invite "potential public embarrassment, public disclosure of the reason for the auditor's dismissal or resignation, and potential SEC intervention."[12] By contrast, where a company is both an audit-client and a consulting client of a particular accounting firm, "the client can easily terminate the auditor as a consultant or reduce its use of the firm's

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[10]Id. at 1178.

[11]Id. (discussing conversation with Jeffrey Gordon).

[12]John Coffee, Understanding Enron: It's About the Gatekeepers, Stupid, 57 Bus. Law. 1403, 1411–12 (2002).

consulting services, in retaliation for the auditor's intransigence."[13] When the client terminates the high-margin consulting services provided by the accounting firm and retains only the low-margin auditing services, there is no need to make any public disclosure. This means that there is no risk that firing the auditor from a consulting engagement will provoke heightened scrutiny from investors, the SEC, or plaintiffs' class action law firms.

Another major complaint about accounting firms has been about the quality of their internal corporate governance. The inability or unwillingness of officials in Andersen's head office in Chicago to monitor and control the auditors in the field has been highlighted in the securities class action litigation that has followed in the wake of Enron. Carl Bass, an Andersen partner and member of that firm's Professional Standards Group, was apparently removed from the Andersen Professional Standards Group when he tried to correct accounting errors in Enron's financial reporting. It also appears that accounting partners at Andersen were able "to ignore with impunity the advice provided by higher level, more objective experts within the firm" and that these higher-level officials were unwilling or unable to assert their authority by following through to ensure that their recommendations were followed.[14] It appears that the Enron-Andersen relation really was an example of an accounting firm captured by its audit-client.

> A number of surviving Arthur Andersen documents reveal that Arthur Andersen was concerned about, yet covered up or ignored fraudulent accounting practices by Enron. For instance, Arthur Andersen Professional Standards Group ("PSG") partner Carl Bass sent an e-mail on 12/19/99 to Defendants Steward and Neuhausen expressing opposition to Enron's accounting for [a special purpose entity (SPE) funded with Enron equity called "LJM2" with whom Enron had a contractual relationship] and urged Arthur Andersen not to support it. Again on 2/4/00 Bass sent another e-mail to Stewart stating that Bass thought that a particular SPE had no real substance and that he was annoyed that Enron would receive appreciation on the Enron stock that had been contributed to that SPE. That information was also sent to [other members of the Enron audit team]. . . . Bass had . . . commented that "this whole deal looks like there is no substance." Later, on March 4, 2001, just before Bass was removed as PSG advisor for the Enron audit team, Bass sent Stewart another e-mail criticizing Enron's accounting for the Blockbuster and Raptor transactions, which,

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[13]Id. at 1412.

[14]Macey & Sale, supra note 3, at 1180.

aggregated, constituted at least $150 million in improperly recognized income or avoided losses at year-end 2000.[15]

II. Empirical Analysis of Accounting Restatements

The lens through which we attempt to observe evidence of differing accounting firm performance is incidence of financial restatements. As the name implies, restatements occur when it is discovered that a company has made errors in its quarterly or annual financial reports, requiring that those reports be redone with the financial results "restated." In other words, restatements occur when an accounting firm errs sufficiently in reporting the financial results of a client company to warrant restating the results. Accounting restatements provide an opportunity to measure accounting firm performance because they indicate the incidence of major accounting errors.

Empirical evidence suggests the importance of restatements in terms of both frequency and financial impact. A well-known General Accounting Office (GAO) study reported that a surprisingly large portion (10 percent) of publicly traded companies restated their financial results due to financial irregularities from 1997–2001.[16] Thus the problem appears to extend beyond the famous restatements that companies such as Enron, Tyco, WorldCom, Adelphia, and Global Crossing have been required to do.

Accounting restatements have, on average, a significant negative impact on equity returns.[17] An important study by Kinney and McDaniel on

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[15]In re Enron Corp. Sec., Derivative & ERISA Litig., 235 F. Supp. 2d 549, 679 (S.D. Texas 2002) (footnote omitted).

[16]U.S. Gen. Acct. Off., Financial Statement Restatements, GAO-03-138 (July 2003).

[17]Messod D. Beneish, Detecting GAAP Violations: Implications for Assessing Earnings Management Among Firms with Extreme Financial Performance, 16 J. Acct. & Pub. Pol'y 271 (1997); Patricia M. Dechow, Richard G. Sloan & Amy P. Sweeney, Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC, 13 Contemporary Acct. Res. 1 (1996); Mark L. DeFond & James Jiambalvo, Incidence and Circumstances of Accounting Errors, 66 Acct. Rev. 643 (1991); Ehsan H. Feroz, Kyungjoo Park & Victor S. Pastena, The Financial and Market Effects of the SEC's Accounting and Auditing Enforcement Releases, 29 J. Acct. Res. (Supp.) 107 (1991); William R. Kinney, Jr. & Linda S. McDaniel, Characteristics of Firms Correcting Previously Reported Quarterly Earnings, 11 J. Acct. & Econ. 71 (1989); Zoe-Vanna Palmrose, Vernon J. Richardson & Susan W. Scholz,

the characteristics of restating firms found significant negative share price reactions upon the issuance of restatements.[18] Richardson et al. found that firms that restate experience declines in share prices of 25 percent on average.[19] The GAO study, consistent with academics' analyses, found that restatements cost investors 10 percent of the equity value of their shares from the day before to the day after the restatement. Measuring the 120-day period beginning 60 days before the restatement to 60 days after the restatement, the GAO found that restatement cost investors 18 percent of their stock value. Firms issuing restatements also tend to be less profitable, slower growing, more heavily leveraged, and have received more qualified audit opinions.[20]

Moreover, it appears that many financial restatements mask precisely the information that investors value most: information about downturns in economic performance. Callen, Livnat, and Segal found, for example, that companies that restated their performance due to accounting errors "exhibited poorer financial performance during the period affected by the restatement relative to the prior period."[21]

Of course, restatements are not the only indicia of auditing errors or of the possibility of auditor capture. Another way that auditors can be lax is by allowing clients to treat accounting errors that should trigger restatements as prospective changes of estimates of future performance, and allowing the changes in accounting treatment to flow through current and future periods in order to avoid attracting attention. Other indicia of auditor quality are the rate at which auditors issue qualifications of their opinions,

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Determinants of Market Reactions to Restatement Announcements, 2001 Univ. of Kansas Working Paper; Lynn Turner, J. Richard Dietrich, Kirsten L. Anderson & Andrew D. Bailey, Jr., Accounting Restatements, 2001 Ohio State Univ. Working Paper.

[18]Kinney & McDaniel, supra note 17. This study, interestingly, also found significant abnormal returns between the issuance of erroneous quarterly reports and the correction of those reports via restatement. Whether these returns are attributable to insider trading or some other mechanism of market efficiency has not been determined.

[19]Scott A. Richardson, A. Irem Tuna & Min Wu, Predicting Earnings Management: The Case of Earnings Restatements (unpublished paper) (Oct. 2002).

[20]Kinney & McDaniel, supra note 17, at 71–93.

[21]Jeffrey Callen, Joshua Livnat & Dan Segal, Accounting Restatements: Are They Always Bad News? 1 (May 2002), available at <http://www.rotman.utoronto.ca/accounting/papers/a2002-07.pdf>.

and the rate at which firms switch auditors. None of these other approaches to the issue we address lends itself to the empirical approach we take in this article because these other indicia require much more subjective judgments about the motivation for the changes being made.

Restatements are, on average, clearly bad for investors, but the precise economic cost of restatements is difficult to quantify because of the inchoate nature of certain of the costs associated with the restatement process. Accounting restatements lead to a reduction in trust in the accounting results reported by public companies. As trust in financial reporting declines, investors are likely to flee the capital markets, making capital formation more difficult and leading, ultimately, to higher capital costs, slower growth, and higher unemployment.

A. The Data

We use two data sets to study financial restatement rates.

First, the General Accounting Office (GAO) identified firms that restated their financial results from 1997–2001. The GAO data are especially appropriate because they discriminate by the nature of the financial restatement. Not all restatements are the same. Although accounting literature traditionally treats all restatements as potentially bad signals for investors and other financial statement users, more recent studies show that some restatements are less problematic than others. A 2002 study by Callen, Livnat, and Segal found that about 15 percent of restatements due to accounting errors, and about 40 percent of restatements due to changes in accounting principles, actually increase the income of the firms that are making the restatements.[22]

Consistent with these observations about restatements, the GAO restatements database we use excludes restatement announcements that resulted from expectedly positive events, normal corporate activity, or simple presentation issues. The database excludes financial statement restatements resulting from mergers and acquisitions, discontinued operations, stock splits, issuance of stock dividends, currency-related issues, changes in business segment definitions, changes due to transfers of management, changes made for presentation purposes, litigation settlements, and arithmetic and general book-keeping errors. Also excluded from the GAO sample are

[22]Callen et al., supra note 21.

general accounting changes made under generally accepted accounting principles, and changes resulting from accounting policy changes. Thus, only restatements made to correct a previous misstatement of financial reports are in the GAO data.[23]

Second, to identify the universe of possible restatements of large firms, we rely on published data from annual editions of *Who Audits America.*[24] These data are needed because the GAO data reveal which firms restate but do not reveal which firms do not restate. The *Who Audits America* annual reports contain information about each publicly traded firm, including sales, location of headquarters, Standard Industry Classification (SIC) code based on the 1987 U.S. SIC classification, and, most importantly, which accounting firm audited each firm. Our focus is on large firms, so we limit the sample to firms with $1 billion or more in sales as measured in 2001 dollars.

B. Hypotheses to be Tested

Using the GAO and other data, empirical analysis of financial restatements may shed light on the issues of Andersen's performance relative to other firms and of auditor independence and governance.

First, if Andersen systematically delivered lower-quality audits, one would expect the rate of financial restatements to be higher among Andersen's clients. Whether revealed by SEC scrutiny or market forces, inaccurate financial statements are difficult to cover up forever. Either a company improves earnings sufficiently to cover the inaccuracy or the inaccuracy is eventually reflected in earnings discontinuity or outright scandal.

Second, Part I's discussion of audit firm capture suggests that large companies will be better able to capture their accounting firms than smaller companies. Other things being equal, the existence of a financial restatement should be associated with increasing firm size but prior research results on this point are mixed. Kinney and McDaniel find that firms that are forced to correct their financial results typically are smaller than other firms in their

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[23]GAO-03-138, supra note 16, at 76.

[24]Who Audits America (40th through 44th eds. Data Financial Press 1997–2001). This is the same data source used by the GAO in its study of concentration in the accounting industry. U.S. Gen. Acct. Off., Public Accounting Firms: Mandated Study on Consolidation and Competition, GAO–03-864, at 111 (July 2003). GAO reports that it tested the reliability of this database's auditor information against other sources and found it reliable. Id. at 111 n.2.

respective industries.[25] But other research reveals that attempts by company management to make accounting adjustments that create the appearance of improved corporate performance tend to be more successful for larger firms than for smaller firms. Both Nelson et al. and Wright and Wright have found that auditors are more likely to succumb to managers' attempts to manage earnings for large clients than for small clients.[26]

The GAO found that about 10 percent of all listed companies announced at least one restatement during the period 1997 to June 2002. But it reports that restatements were traditionally seen as primarily affecting small companies and technology companies.[27] The decreasing rate of restatements as firms increase in size may constitute evidence undermining the capture hypothesis. Alternatively, the firms in the full GAO sample, while large, may be, on average, still too small to capture auditors. Further exploring the relation between firm size and restatement rates among large firms should provide support for one explanation or the other. It may be that firms have to reach a very significant size level before capture becomes likely. Since our data include a plausible measure of firm size—sales—this hypothesis can be tested.

C. Empirical Results

1. Restatement Rates by Audit Firms

We first examine factors that might influence restatement rates in isolation and then combine the influence of these factors in regression models.

Table 1 reports the basic relation between accounting firms and restatement rates. For each major auditing firm, the first row of numbers is the proportion of large-firm clients that had financial restatements. For example, Table 1's first row shows, under the 1997 column, that no large firms audited by Andersen in 1997 have, according to the GAO, restated their results. The same row, under the table's 2001 column, shows that 3.1 percent of Andersen's 2001 larger clients issued financial restatements. The

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[25]Kinney & McDaniel, supra note 17.

[26]Mark W. Nelson, John A. Elliott & Robin L. Tarpley, Evidence from Auditors about Managers' and Auditors' Earnings Management Decisions, 77 Acct. Rev. 175 (2002) (Supp.); Arnie Wright & Sally Wright, An Examination of Factors Affecting the Decision to Waive Audit Adjustments, 12 J. Acct. Auditing & Fin. 15 (1997).

[27]GAO-03-138, supra note 16 at 17.

Table 1: Audit Firm Restatement Rates for Large Clients, by Year, 1997–2001

	Year					
Audit Firm	*1997*	*1998*	*1999*	*2000*	*2001*	*Total*
Andersen	0.000	0.010	0.021	0.014	0.031	0.016
	202	199	285	212	224	1,122
Coopers	0.008	—	—	—	—	0.008
	132	—	—	—	—	132
Deloitte	0.000	0.007	0.026	0.006	0.049	0.018
	165	152	233	167	164	881
Ernst	0.019	0.019	0.027	0.005	0.034	0.021
	215	215	291	218	233	1,172
KPMG	0.000	0.007	0.024	0.034	0.034	0.020
	147	144	208	146	149	794
PWC	0.000	0.015	0.013	0.037	0.048	0.024
	145	270	371	272	269	1,327
Total	0.005	0.012	0.022	0.020	0.039	0.020
	1,006	980	1,388	1,015	1,039	5,428

NOTE: The first row for each firm is the number of restatements divided by the number of audits. The second row for each firm is the number of audits.

SOURCES: GAO; annual editions of *Who Audits America.*

numbers in the rows appearing under the restatement rates indicate the total number of firms in the sample audited in the year. For example, the 1997 column indicates that the zero restatements for Andersen clients in that year were out of 202 clients. The 3.1 percent Andersen restatement rate for 2001 is based on a total Andersen client sample for 2001 of 224. The number of restatements would thus be 0.031 × 224, or seven restatements.

Table 1's "Total" column reports the cumulative five-year restatement rates and client counts for each firm. Of the five major accounting firms that span our five-year sample period (Coopers merged into PWC and thus appears in only one column), Andersen had the lowest rate of restatements, 1.6 percent. The year-by-year analyses contained in the table's individual columns indicate that this low rate over our five-year sample period is not an artifact of one peculiar year. In no year was Andersen the leader in restatement rates for large firms. In fact, no firm differed statistically significantly from other firms in restatement rates. Andersen's low rate could be a consequence of random fluctuation, but no evidence supports it having a higher restatement rate than other accounting firms.

The small number of restatements raises the question of whether the data have sufficient power to detect an Andersen effect, even if one exists.

A power computation helps assess this issue. The non-Andersen restatement rate is 90 restatements out of 5,306 audits or 0.017. Suppose one designated a restatement rate of twice the industry standard to be socially meaningful. Under this view, an Andersen restatement rate of 0.034 would be socially important. Given our sample size, the probability of detecting a difference in restatement rates this large or larger, at a 0.05 level of statistical significance, is 0.89, close to 90 percent. If, instead, one regarded a restatement rate of 1.5 the industry average as important, the probability of detecting such a difference, at the 0.05 level, in our sample is 39 percent. So the persuasiveness of our finding of no statistically significant difference between Andersen and other firms depends on how large a difference one would regard as socially important. Putting aside the power calculation, the inability to detect a significant effect in five full years of large-firm data suggests that the effect requires many years of data to emerge. This is in contrast to other factors we analyze, notably firm size and the trend of increasing restatements over time, that do emerge in the same size sample. So the absence of an Andersen effect is likely not merely a consequence of sample size.

However, other factors should be considered. Even within this set of restatements, as filtered by the GAO, not all restatements are the same. Restatements due to errors in "revenue recognition" (recording revenues) is the largest category of restatements due to accounting errors. It has the largest negative effect on firms, accounting for an average decline in ROA (return on assets) of eight percent.[28] To further examine the restatement pattern across accounting firms, we isolate those firms that were forced to restate their financial results due to earnings restatements. For each firm, we divided the number of revenue recognition restatements by the number of restatements. Table 2 reports the results.

The table reveals no statistically significant pattern of revenue recognition restatements ($p = 0.469$) across accounting firms. Andersen's rate is not the lowest, but it is far from the highest. Aside from Coopers, which has only one year of data, Andersen had the second lowest rate of revenue recognition restatements.

Clients and auditors may differ in their willingness to acknowledge previous accounting errors by issuing financial restatements. For example, as noted above, an auditor can be lax by allowing clients to treat corrections

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[28]Callen et al., supra note 21, at 3.

Table 2: Rates of Revenue-Recognition Restatements by Auditing Firm

Audit Firm	*Proportion of Restatements Involving Revenue Recognition*	*Number of Restatements*
Andersen	0.278	18
Coopers	0.000	1
Deloitte	0.563	16
Ernst	0.360	25
KPMG	0.250	16
PWC	0.344	32
Total	0.352	108

SOURCES: GAO; annual editions of *Who Audits America.*

that should cause restatements as prospective changes of estimates, which flow through current and future periods, and avoid attracting attention. Thus, the fact that accounting firms have similar restatement rates may not reflect actual audit quality or auditor independence because some auditors may be more reluctant to issue restatements or may have a pool of clients that are more reluctant. To the extent that an accounting firm values its reputation, the firm may be reluctant to require that an audit-client restate its financial results, since such a requirement will reflect poorly on the audit firm's original work. Thus accounting firms may have an incentive to refrain from revealing their previous errors in the hopes that such errors will remain undetected.

This sort of unrevealed behavior is obviously difficult to detect but two tests of this hypothesis can be conducted with available information. First, the GAO data provide one useful approach. The GAO report includes an analysis of the identity of the source that initially prompted the restatement. SEC-prompted restatements may be of special concern because neither the company nor its auditor has been forthcoming. Auditor-prompted restatements may be of interest because they represent tension between auditors and management.[29] Another way in which auditor reluctance to issue restatements might emerge is through observing the restatement pattern in the year after audit-clients switch auditors. If Andersen were an outlier, one might expect to see a higher rate of restatements by its former clients in the year following a change of auditors. To study these, we identified each instance

[29]We would expect auditor-prompted restatements to be extremely rare because it is our understanding that, as a matter of industry practice, auditors typically report auditing mistakes to their clients and give the clients the opportunity to report the restatement.

Table 3: Audit-Firm Propensity to Suppress Needed Restatements

A. Entity Prompting Financial Restatement

	Unknown	*SEC*	*Auditor*	*Company or Company/FASB*	*Total Restatements*
Andersen	10	5	0	3	18
Coopers	1	0	0	0	1
Deloitte	8	3	0	5	16
Ernst	8	7	1	9	25
KPMG	6	6	0	4	16
PWC	14	5	1	12	32
Total	47	26	2	33	108

B. Restatements in Year After Auditor Changes

Old Auditor	*No Restatement*	*Restatement*	*Percent Restatements*	*Total Audits*
Andersen	12	1	7.7	13
Deloitte	6	1	14.3	7
Ernst	12	0	0.0	12
KPMG	16	2	11.1	18
PWC	26	0	0.0	26
Total—year following change	72	4	5.3	76
No change	4,998	100	2.0	5,098
Total	5,070	104	2.0	5,174

NOTE: Each cell in Panel A is the number of restatements prompted by the entity represented in the column. Panel B's firm-specific rows are the number of audits with and without restatements in the year following a change of auditors. Panel B excludes Coopers because all of its clients had to change auditors following its combination with what is now PWC.

SOURCES: GAO; annual editions of *Who Audits America.*

of auditor change and recorded whether a restatement occurred in the year following change. Table 3 summarizes the results of both inquiries.

Table 3, Panel A, reports the entity prompting restatement for each of the 108 restatements in our data. It shows, as best the GAO can detect, that no auditing firm is a fertile source of restatement initiatives. Only two of 108 restatements were prompted by the auditor and no auditor prompted more than one restatement. The many unknown prompters, 47 of 108 (44 percent), suggests hesitation in reaching firm conclusions. Nevertheless, the GAO data provide little evidence that Andersen is unusual. The SEC prompted restatements in five of the 18 (28 percent) Andersen-client restatements. KPMG's six of 16 (38 percent) rate was higher and the rate of SEC-prompted statements did not differ significantly across accounting firms ($p = 0.583$).

Of those restatements with known causes, Andersen's five of eight restatements was high, but not statistically significantly different from even the lowest rate, PWC's five of 18 ($p = 0.189$). If one looks at SEC-prompted restatements as a proportion of all audits (Table 1 reports the number of audits by each firm), rather than of all restatements, the differences in restatement rates by source of restatement become vanishing small.

Panel B reports the restatement rates for the year following a change of auditor. We exclude Coopers because its absorption by PWC meant that all of its clients had to change auditors. The restatement rate across all other firms in the year following an audit change is about 5.3 percent. This rate is 2.7 times the restatement rate in years in which there was no auditor change, shown in Panel B's penultimate row ($p = 0.066$). So auditor change years seem to lead to a higher rate of restatements, but there again is little evidence of an Andersen effect. The rate of audits for previous Andersen clients in years following auditor change is 7.7 percent. Deloitte and KPMG have higher rates; Ernst and PWC have lower rates. The small number of auditor changes makes one hesitate to conclude too much, but yet another piece of evidence fails to support Andersen as a performance outlier.

2. Other Influences on Restatement Rates

Size. As audit-clients increase in size, the risk of audit-firm capture should increase. As suggested above, the person who heads the audit team of a large client likely finds his or her career path increasingly tied to pleasing that client as the client increases in size. This suggests that we should expect an increasing rate of restatements as firm size increases. Figure 1 shows precisely this effect. The restatement rate for audit-clients with sales in excess of about $14 billion is more than twice the restatement rate for audit clients with sales of about $1 billion.

The existence of the size effect raises the question of whether the effect varies by audit firm. Would a figure such as Figure 1 vary if it were broken down by the major auditing firms? The Appendix shows the relation between restatement rates and client size for individual audit-firm figures. It suggests that the relation between client size and restatements is strongest for Deloitte and PWC, and not strong at all for Andersen.[30]

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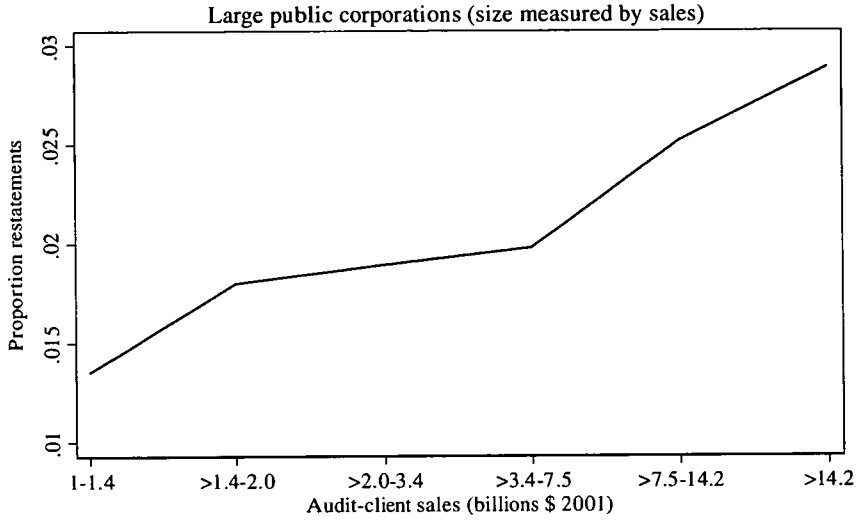
[30]We have also analyzed the relation between restatement rates and a client's share of sales of all of an audit firm's clients' sales. The results do not materially differ from those reported in the Appendix.

Figure 1: Restatement rate by audit-client size.



SOURCES: GAO; annual editions of *Who Audits America*, 1997–2001.

Regional Effects. Accounting-firm capture might manifest itself in the form of regional or local office effects. Treating each firm as a single entity does not reflect the reality of how dispersed their offices are. Although Andersen generally may have been no different than the other big accounting firms, perhaps Andersen's offices in particular parts of the country were more susceptible to capture.

The small number of large-client restatements, 108 over a five-year period, limits the ability to detect effects at the local office level. Table 4 reports the restatement rates for each audit firm for each region. For example, it shows that Andersen's New England offices restated 1.4 percent of audits. Andersen offices in the west restated 2.7 percent of audits.

Andersen does show some interoffice variation. The restatement rate in the plains states (defined in this study to comprise Kansas, Nebraska, North Dakota, Oklahoma, South Dakota) is higher than in other regions. However, two factors suggest that this is not evidence of an Andersen effect. First, the plains states restatement rates were highest for all the remaining Big 4 firms. And the difference between the plains states restatement rate and that for other regions is smaller for Andersen than for the other firms. Second, the plains region has by far the smallest number of audits, 95 out of 5,245 and the data become too thin to support positive conclusions. For

Table 4: Financial Restatement Rates by Audit Firm and Region

	Audit Firm						
Region	*Andersen*	*Coopers*	*Deloitte*	*Ernst*	*KPMG*	*PWC*	*Total*
New England	0.014	0.000	0.000	0.024	0.047	0.035	0.026
	71	19	44	84	86	113	417
Mid-Atlantic	0.012	0.000	0.017	0.017	0.012	0.034	0.020
	168	37	178	238	169	353	1.143
South (confederacy)	0.025	0.000	0.020	0.013	0.016	0.028	0.020
	324	28	204	309	193	211	1,269
Midwest	0.009	0.000	0.015	0.031	0.014	0.031	0.020
	321	25	204	326	139	228	1,243
Plains	0.034	0.000	0.045	0.100	0.111	0.250	0.074
	29	2	22	20	18	4	95
Pacific/south-west	0.017	0.091	0.021	0.022	0.017	0.014	0.019
	118	11	193	138	120	143	723
South (nonconfed)	0.000	0.000	0.042	0.000	0.000	0.000	0.004
	50	3	24	35	44	75	231
West	0.027	0.000	0.000	0.000	0.125	0.000	0.016
	37	6	11	19	8	43	124
Total	0.016	0.008	0.018	0.021	0.021	0.027	0.021
	1,118	131	880	1,169	777	1,170	5,245

NOTE: The first row for each region reports the restatement rate for the audit firm in the region. The second row for each region reports the number of audits for the audit firm in the region.

SOURCES: GAO; annual editions of *Who Audits America.*

example, Andersen's 3.4 percent plains region restatement rate is one restatement out of 29. A test of whether one can reject the hypothesis that Andersen's restatement rates were equal across regions yields a p-value of 0.58, using Fisher's exact test, suggesting that the hypothesis cannot be rejected. Only KPMG's intra-firm variation across regions is statistically significant, with $p = 0.04$.

Table 4's last column ignores individual accounting firm variation but reveals a possible overall regional effect. The plains states had by far the highest rate of restatements, 7.4 percent compared to a national average of 2.1 percent. Although this regional variation does not appear to be particularly revealing of something special about Andersen, it does suggest that a complete analysis of restatement rates should account for regional effects.

Industry effects. Certain industries may be more difficult to audit than others because the nature of their business is more complex. Alternatively, it may be that the participants in some industries are more unscrupulous than

others, or that they are subject to more intense competitive pressures that induce them either to cheat more or to take more aggressive accounting positions in order to impress customers, suppliers, or participants in the capital markets that extend credit to the company. These factors suggest that one ought to control for possible industry effects before concluding that audit firms do or do not differ in restatement rates.

The distribution of clients among large audit firms highlights the need to account for industry effects. The degree of client-industry concentration within the accounting profession has become acutely worse since Andersen disappeared. Table 5 reports the GAO's findings on the percentage of assets audited by particular accounting firms in selected industries.[31] For example, among general building contractors, two firms (Andersen and Ernst & Young) audited 64.5 percent of the industry assets in 1997, while two firms (Ernst & Young and Deloitte & Touche) audited 80.1 percent of the industry assets in 2002. Similarly, Pricewaterhouse-Coopers and Andersen audited 61.7 percent of the assets in the petroleum and coal products business in 1997, while Pricewaterhouse-Coopers audited 76.4 percent of this industry in 2002. Since audit firms' client concentrations vary by industry, it is useful to control for clients' industries in assessing audit-firm effects.

The GAO used the industry categories reported in Table 5 to illustrate industry concentration. But the 28 industries in Table 5 account for only about half the observations in our data. In addition, the GAO industry categories yield eight categories of firms that did not issue restatements.[32] This lack of variation precludes including such industry categories in the regression models below. We therefore use the Standard Industrial Classifications (SIC) used by the GAO[33] but regroup the classifications into 17 reasonably sized categories, each with some number of restatements. Table 6 reports the restatement results by our industry groupings.

Industry restatement rates vary from 5.2 percent in "Instruments and related products" to 0.7 percent in "Mineral industries." One can reject the

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[31]The data in these tables are from GAO Mandated Report, supra note 24, at 27–30 & Appendix I.

[32]These eight categories are Metal mining, Lumber and wood products, Furniture and fixtures, Fabricated metal products, Trucking and warehousing, Air transportation, Nondepository institutions, and Security and commodity brokers.

[33]The GAO used the SIC codes reported in *Who Audits America*. GAO Mandated Report, supra note 24, at 111.

Table 5: Percent of Assets of Selected Industries Audited by Particular Accounting Firms 1997, 2002

	Andersen	*Coopers*	*Deloitte*		*Ernst & Young*		*KPMG*		*PWC*	
	1997	*1997*	*1997*	*2002*	*1997*	*2002*	*1997*	*2002*	*1997*	*2002*
General building contractors	31.6	17.7	13.3	19.4	32.9	60.7	3.3	3.3	0.6	15.0
Petroleum and coal products	33.2	11.1	1.0	3.2	21.9	18.2	4.3	2.2	28.5	76.4
Air transportation	39.9	0.0	1.4	37.4	37.5	48.7	20.8	13.4	0.3	0.4
Nondepository institutions	8.9	0.9	8.3	28.4	3.6	3.8	72.8	59.5	2.8	3.8
Metal mining	31.0	16.8	0.4	0.6	9.1	40.6	3.9	6.4	37.6	50.1
Chemical and allied products	20.6	16.0	21.0	25.1	14.6	14.1	11.7	10.6	15.0	48.7
Industry machinery and equipment	5.7	4.6	5.4	6.3	5.7	11.4	45.5	51.9	32.6	29.5
Business services	8.8	51.6	12.8	11.2	15.4	6.3	6.3	8.7	4.3	60.8
Oil and gas extraction	15.9	13.8	5.1	5.3	17.2	12.1	2.6	18.3	45.1	63.4
Furniture and fixtures	49.1	1.5	9.4	11.1	7.5	13.2	7.0	6.1	22.2	68.4
Transportation and equipment	1.4	38.4	46.3	44.0	6.9	8.8	1.1	1.6	5.9	45.4
Electric, gas, and sanitary services	35.8	17.7	28.0	62.2	2.9	5.8	3.3	7.3	11.9	24.2
Security and commodity brokers	0.0	20.9	30.3	56.8	46.8	37.3	1.3	3.0	0.6	2.7
Health services	10.2	9.2	5.3	5.0	45.0	44.1	24.2	29.8	4.4	18.5
Depository institutions	6.6	6.5	8.3	11.2	21.6	15.8	31.6	35.6	19.7	35.2
Lumber and wood products	82.5	2.7	9.0	8.7	0.5	42.5	0.7	29.1	3.8	18.4
Printing and publishing	32.5	9.0	13.5	21.5	21.7	25.1	7.5	13.9	14.0	37.5
Water transportation	34.7	1.9	10.6	9.8	16.7	20.1	11.6	9.9	34.7	60.1
Holding, other investment companies	35.4	3.7	4.5	26.8	14.6	26.8	31.0	19.4	3.8	15.4
Primary metals	9.2	28.2	5.4	11.7	25.7	26.8	0.3	1.2	30.8	59.3

Table 5: Continued

	Andersen	*Coopers*	*Deloitte*		*Ernst & Young*		*KPMG*		*PWC*	
	1997	*1997*	*1997*	*2002*	*1997*	*2002*	*1997*	*2002*	*1997*	*2002*
Paper and allied products	35.5	11.8	15.0	44.2	13.4	24.3	9.0	12.8	14.5	18.6
Trucking and warehousing	46.7	4.3	4.5	29.5	27.1	16.2	15.3	49.6	1.5	1.9
Communications	24.6	30.8	6.1	61.0	18.8	5.7	5.9	7.2	13.5	23.8
Hotels and other lodging	88.6	0.3	1.7	29.7	2.4	41.7	6.0	12.8	0.0	14.4
Fabricated metal products	16.4	14.6	4.3	12.9	12.4	25.2	23.4	24.5	27.1	36.0

SOURCE: GAO Mandated Study on Consolidation and Competition.

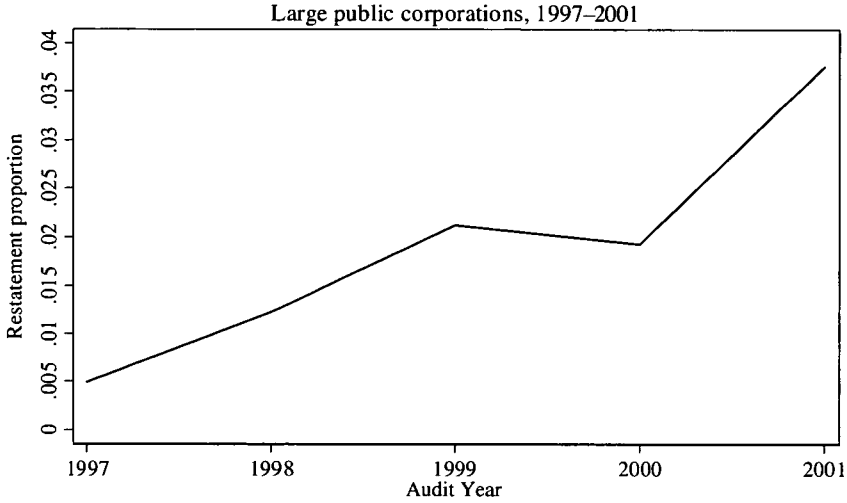
Table 6: Restatement Rates by Industry

	Nonrestatements		*Restatements*		
SIC-Based Groups	*Number*	*Percent*	*Number*	*Percent*	*Total Audits*
Mineral industries	145	99.3	1	0.7	146
Construction industries	74	97.4	2	2.6	76
Manufacturing	589	98.2	11	1.8	600
Transportation and utilities	591	98.7	8	1.3	599
Communications	150	98.7	2	1.3	152
Wholesale trade	262	97.0	8	3.0	270
Retail trade	482	97.6	12	2.4	494
Finance, insurance, and real estate	752	99.2	6	0.8	758
Services	462	98.3	8	1.7	470
Instruments and related products	109	94.8	6	5.2	115
Food and kindred products	172	96.6	6	3.4	178
Paper and allied products	107	97.3	3	2.7	110
Chemicals and allied products	228	97.9	5	2.2	233
Industrial machinery and equipment	308	96.9	10	3.1	318
Electrical and electronic equipment	212	95.9	9	4.1	221
Transportation equipment	160	96.4	6	3.6	166
No SIC listed or SIC missing	517	99.0	5	1.0	522
Total	5,320	98.0	108	2.0	5,428

Pearson $chi_2(16) = 31.1675$; $p = 0.013$.

SOURCE: GAO Mandated Study on Consolidation and Competition.

Figure 2: Financial statement restatement rate by year.



SOURCES: GAO; annual editions of *Who Audits America*, 1997–2001.

hypothesis that the industry groups have the same restatement rate at the 0.013 level. It thus is appropriate to control for industry effects in assessing audit firm restatement rates.

Time Trend. Figure 2 shows by year the proportion of financial statements that were restated. It shows an obvious upward trend. Restatement rates by large firms rose from less than 1 percent in 1997 to nearly 4 percent in 2001. The number of restatements increased eight-fold, from five in 1997 to 41 in 2001. These findings are consistent with studies showing that the number of restatements generally has been on the rise for several years.[34]

The increase in restatements is important for a number of reasons. First, from the perspective of this article, an increase in the number of restatements provides an opportunity for accounting firms to distinguish themselves on the basis of quality if they so choose. This is because if the general level of errors in financial reporting is rising, then an individual accounting firm can differentiate its product simply by keeping its own rate of accounting errors constant. The marked increase in restatements shown

[34]Stephen Taub, State, Restate, Lawyer Up (July 22, 2002), available at <http://www.cfo.com/article/1,5309,7472%7C%7CA%7C93%7C100,00.html>.

in Figure 2 indicates that an accounting firm could develop a reputation for providing higher-quality audit services than its rivals simply by holding constant the level at which its clients restate their earnings. Such a strategy would generate product differentiation as rivals' clients report increasingly high levels of accounting problems. But this has not been the case. All the large accounting firms' clients continue to restate their financial results at similar rates, even as the overall level of restatements continued to increase between 1997 and 2001.

Similarly, the time-trend data is of interest because it suggests that, whatever the source of the errors in accounting that lead to restatements, the phenomenon appears to be getting more rather than less pronounced. The restatement phenomenon precedes the Enron debacle and the passage of Sarbanes-Oxley, and has continued after these events, suggesting that the pathologies within the accounting profession and within corporate management are not easily resolved by political salience or legislative action.

The time trend likely reflects, among other factors, the efforts by the SEC, which began in late 1998 and 1999 to focus energy and resources on earnings management and aggressive accounting.[35] We find it interesting that this increased focus did not result in any differences in accounting irregularities among the clients of any single large accounting firm. All the big accounting firms appear to have responded the same way not only to pressure from management, but also to the SEC's enhanced enforcement agenda.

3. Regression Models

Taken in isolation, we find no audit-firm effect on restatement effects, a significant plains states regional effect, suggestive industry effects, and a highly

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[35]The beginning of the SEC's focus on accounting issues can be traced to a speech made on Sept. 28, 1998 by then SEC Chairman Arthur Levitt at the NYU Center for Law and Business, which is said to have "launched the SEC's attack on the practice of "earnings management" by public companies." Available at <http://www.bassberry.com/resources/corp/061199/2.html>; see also CNNMoney, available at <http://money.cnn.com/1999/07/28/fortune/fortune_earnings/>, reporting on "SEC crackdown on managed earnings," and <http://www.aicpa.org/pubs/jofa/sep2000/grant.htm> (American Institute of Certified Public Accountants website, quoting Arthur Levitt as saying, on Sept. 28, 1998, "We will formally target reviews of public companies . . . that appear to manage earnings. Likewise our enforcement team will continue to root out and aggressively act on abuses of the financial reporting process.") (cites accessed Oct. 15, 2003).

suggestive time trend. To more fully explore audit-firm effects, we consider them simultaneously with the other factors in regression models. Because the dependent variable in our models is dichotomous—each firm in each year did or did not restate financial results—logistic regression is an appropriate model. Since we have multiple observations of most client firms (each client firm reports financial results each year), it is appropriate to control for the nonindependence of the client observations across years. We adjust the standard errors of the regression coefficients to account for this nonindependence. Table 7 reports the results.[36]

Table 7 indicates that the absence of evidence of any audit-firm effects survives controlling for industry, firm size, region, and year. The effects reported in the univariate results persist. There are strong, significant time effects and a plains states effect. The industry variables, not reported in the table, are collectively significant, but this result is sensitive to how industries are allocated among the major groupings. The noteworthy result is that our finding of no evidence of differences in restatement rates across accounting firms persists after controlling, as best we can, for the fact that accounting firms appear to specialize along industry-specific lines, for regional effects, for client size, and for time effects.

III. IMPLICATIONS OF RESULTS

The restatement results have implications on two levels. First, of course, they directly show whether Andersen's audits yielded financial restatement rates materially different from those of other firms. Second, the results, as proxies for accounting firm performance, can help assess the state of client capture and corporate governance in the studied firms.

A. Is Andersen an Outlier?

As noted earlier, some policy choices reflect the belief that Andersen was a special case of bad behavior within the accounting industry. Others appear to reflect the belief that accounting industry problems are endemic, that

[36]An alternate set of models using panel data techniques with the client firms as the panel, the year-of-audit time, and dummy variables for audit firms also yield no significant audit-firm effects. Maximum likelihood complementary log-log regression models similarly yield results like those in Table 7.

Table 7: Logistic Regression Models of Restatements

	1	*2*	*3*	*4*
	Dependent Variable = Restatement (1 = yes, 0 = no)			
Andersen (reference category)				
Coopers	−0.759	−0.787	0.695	0.626
	(0.74)	(0.76)	(0.62)	(0.55)
Deloitte	0.126	0.078	0.091	−0.011
	(0.36)	(0.23)	(0.26)	(0.03)
Ernst	0.290	0.277	0.291	0.155
	(0.95)	(0.90)	(0.94)	(0.49)
KPMG	0.232	0.229	0.250	0.161
	(0.65)	(0.64)	(0.69)	(0.45)
PWC	0.416	0.365	0.323	0.291
	(1.41)	(1.26)	(1.10)	(0.98)
Sales (log)		0.207*	0.204*	0.183+
		(2.27)	(2.27)	(1.91)
Year 1997 (reference category)				
Year 1998			0.966+	0.974+
			(1.67)	(1.67)
Year 1999			1.563**	1.619**
			(2.92)	(3.00)
Year 2000			1.456**	1.466**
			(2.66)	(2.66)
Year 2001			2.169**	2.194**
			(4.22)	(4.22)
New England (reference category)				
Mid-Atlantic				−0.083
				(0.22)
South confederacy				−0.046
				(0.12)
South nonconfederacy				−1.688
				(1.59)
Midwest				−0.165
				(0.43)
Plains				1.463**
				(3.18)
West				−0.279
				(0.36)
Pacific/southwest				−0.231
				(0.54)
Industries by SIC code				Not reported
Constant	−4.116**	−5.793**	−7.251**	−6.543**
	(17.86)	(7.23)	(7.74)	(5.99)
Observations	5,428	5,428	5,428	5,428

+Significant at 10 percent; *significant at 5 percent; **significant at 1 percent.

NOTE: Absolute value of *t* statistics in parentheses.

SOURCES: GAO; annual editions of *Who Audits America.*

Andersen was not unusual. Both sets of underlying assumptions could be true. The accounting industry might need reform and, within the industry, Andersen may have been an especially suspect participant. Under this view, a policy analysis of whether to single out Andersen for termination through criminal prosecution would include considering factors in addition to those customarily informing the decision to criminally prosecute.

In general, the theory that Andersen was a "miscreant" and an outlier seems to have been embraced by the Justice Department and by courts examining Andersen's behavior. This outlier view appears in an opinion in the civil class action securities fraud lawsuit against Enron's professional advisors, including Andersen as well as Enron's banks and law firms. The opinion in *In re Enron Securities, Derivative & ERISA Litigation* quotes the government's complaint to the effect that Andersen "is a repeat offender with a history of failed audits, conflicts of interest and document destruction in some of the most egregious cases of accounting fraud in history." Specifically mentioned are Andersen's allegedly improper conduct in Waste Management, Sunbeam Corporation, Baptist Foundation of Arizona, Colonial Realty Company, and Lincoln Savings/ACC. Andersen, it seems, deserved to fail since the firm was alleged to have had a "callous, reckless disregard for its duty to investors and the public trust for decades."[37] The Justice Department's decision to bring criminal charges against Andersen and none of the other major accounting firms supports the view that Andersen deserved to be singled out for special treatment, though of course the decision to bring any prosecution depends on other factors, including the strength of the case and, sometimes, the public's perceived demand for action.

The evidence presented here cannot of course directly counter the court's qualitative statements, which are consistent with the Justice Department's behavior, about Andersen's behavior. The evidence does suggest that, by one objective measure of accounting performance, Andersen was a mainstream firm.

Consistent with our results, on January 2, 2002, Deloitte & Touche published the results of its audit quality peer review of Andersen. This peer review is considered "one of the most intensive peer reviews in Andersen's history," covering 240 Andersen audit engagements in 30 offices (the sample did not include Enron), and concluded that "Andersen's system of account-

[37]See In re Enron Corp. Sec., Derivative & ERISA Litig., 235 F. Supp.2d 549, 675–76 (S.D. Texas 2002).

ing and audit quality provided reasonable assurance of compliance with professional standards."[38]

In related research, Chaney and Philipich have examined whether Andersen's performance in its Enron engagement affected the share prices of Andersen's other clients.[39] As with our research, Chaney and Philipich try to determine whether auditor reputation matters, and the extent to which market forces are effective at inducing managers to submit to high-quality monitoring in order to reduce agency costs.

Chaney and Philipich examine the market reaction to Enron-related events that might have an impact on Andersen's reputation for providing high-quality audits. Chaney and Philipich find that Andersen clients begin losing value, relative to companies audited by other accounting firms, in January 2001. Unlike our own research, Chaney and Philipich's research appears to assume that Andersen's reputation was not different from that of the other Big 5 accounting firms prior to the Enron debacle. Interestingly, and consistent with our results, in their event studies, Chaney and Philipich do not find any statistically significant cumulative abnormal returns for Andersen clients and non-Andersen clients as a result of Enron's announcement on November 8, 2001 that it was restating its financial results; nor do they find any negative abnormal returns when Andersen was subpoenaed by Congress to turn over documents related to Enron. There also was no finding that Andersen's clients performed worse than the clients of other audit firms around December 12, 2001, when Andersen's CEO, Joseph Bernardino, testified before Congress that Andersen's Enron audit engagement team had made errors in judgment in connection with its auditing work for Enron.[40]

Interestingly, however, Chaney and Philipich do find statistically significant negative results for Andersen's clients surrounding the January 10, 2002 date when Andersen announced that it had shredded audit documents related to its work on the Enron account. These results might be interpreted as evidence of a loss of reputation for Andersen, relative to other firms. On the other hand, rather than signaling relative quality, these results also could

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[38]Paul R. Chaney & Kirk L. Philipich, Shredded Reputation: The Cost of Audit Failure, 40 J. Acct. Res. 1221, 1223 (2002) (quoting Deloitte & Touch report).

[39]Id.

[40]Id.

be interpreted as signaling that Andersen was likely to be indicted as a result of its document shredding and that the probability of the firm surviving was low. It is also worth noting that document shredding does not reflect on the firm's overall ability to conduct audits.

Chaney and Philipich's results might be interpreted more straightforwardly as signaling the market's assessment of the probability of Andersen's survival. The prospect that Andersen would fail posed significant regulatory costs and uncertainty on its existing clients. In addition to the direct costs of having to switch auditors if Andersen should fail, public companies audited by Andersen faced the risk that they would be unable to file in a timely fashion legally mandated reports with the SEC that require the inclusion of audit-related services and opinion letters. Thus, even holding auditor quality constant, the prospect that Andersen would cease to exist as a going concern would be expected to have a significant negative effect on the share prices of Andersen's clients.

In addition, during the period studied by Chaney and Philipich, there also was uncertainty about whether certain institutional investors would be able to invest in companies audited by Andersen. This result appears to be confirmed by Rauterkus and Song's finding that the unsealing of the criminal indictment against Arthur Andersen had a negative and significant impact on Andersen's clients, while no other event besides Enron's bankruptcy filing had a statistically significant effect on Andersen's clients.[41]

An important additional factor that should have influenced the decision to effectively close Andersen is the accounting industry's high concentration. The top four firms account for more than 60 percent of the entire market. The Big 4 firms audit over 97 percent of public companies with sales over $250 million. They audit 99 percent of public company total sales. The smallest Big 4 accounting firm had $3.2 billion in revenue in 2002. The fifth largest firm, Grant Thornton, had only $400 million in revenue, and the sixth largest firm, BDO Seidman, had $353 million in revenue.[42] After Andersen's demise, the Hirschman-Herfendahl index (HHI) for the accounting profession increased to 2566, well above the threshold of 1800 that indicates a highly concentrated market in which firms have the potential for market power.

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[41]Stephanie Yates Rauterkus & Kyojik R. Song, Auditor's Reputation, Equity Offerings, and Firm Size: The Case of Arthur Andersen (unpublished paper) (Dec. 31, 2003).

[42]GAO Mandated Report, supra note 24, at 16–21.

The market for auditing the work of large companies is even more concentrated. In 2002, the four-firm concentration ratio for public companies was 99 percent.[43] In 1997, when Andersen was still in business, the concentration ratio was only 71 percent. Thus, unless Andersen was truly an outlier, effectively terminating its existence was an important public policy question that may not have been given full consideration. As the GAO observed in its report, "It is unclear whether and to what extent the Antitrust Division was consulted and to what extent the DOJ's Antitrust Division had input into the decision to criminally indict Andersen."[44]

By contrast, the 2002 Sarbanes-Oxley Act, Congress's legislative response to the Enron era, reflects the premise that significant structural problems in the accounting industry required legislative attention. For example, Sarbanes-Oxley created the Public Company Accounting Oversight Board (PCAOB),[45] which was given the authority to oversee accounting firms that audit public companies. The Act requires accounting firms that perform audits of public companies to register with the PCAOB. The PCAOB is empowered to set standards for the reports generated in the course of public company audits, to inspect public accounting firms, to conduct investigations, and to impose sanctions on accounting industry professionals and accounting firms that fail to meet PCAOB standards.

Sarbanes-Oxley also provides sanctions for accounting firms that fail to supervise their accountants, and establishes duties of care for audit firms and their partners.[46] To improve auditor independence, Sarbanes-Oxley requires that the auditor partners assigned to client accounts be rotated every five years[47] and severely restricts consulting and other nonaudit ser-

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[43]The concentration ratio is the proportion of total output in an industry that is produced by a given number of the largest firms in the industry. The two most common concentration ratios are for the four largest firms and the eight largest firms. The four-firm concentration ratio, as such, is the proportion of total output produced by the four largest firms in the industry and the eight-firm concentration ratio is the proportion of total output produced by the eight largest firms in the industry. The four-firm concentration ratio is commonly used to indicate the degree to which an industry is oligopolistic. Id. at 136–37.

[44]Id. at 19.

[45]Pub. L. No. 107-204, codified in various parts of Titles 15 and 18 of the U.S. Code, §§ 101–109.

[46]Id. § 105.

[47]Id. § 203.

vices that audit firms can offer their clients.[48] These restrictions were designed to improve auditor independence by preventing the preparation of accounting statements by accounting firms from being used as a "loss leader" for the purpose of selling more lucrative tax and consulting services.

Our empirical results are consistent with the premise, inherent in Sarbanes-Oxley, that problems that exist in the accounting industry were not isolated in a single firm, but are shared by all the firms that audit public companies.

B. Client Capture and Corporate Governance

The evidence on accounting firm restatements does not indicate that the other accounting firms have been captured to any greater or lesser degree than Andersen. It does, however, suggest one notable relation between firm size and restatement likelihood.

The positive, significant coefficient on firm size in Table 7, as measured by sales, may be interpreted as evidence of capture. The coefficient indicates that larger firms are more likely to restate their financial results than the smaller firms in our sample. But recall that all the firms analyzed here are large in the sense that they have sales of at least $1 billion. This result is consistent with the capture theory of accounting firms. It is not consistent, however, with the GAO's findings that smaller firms are more likely to restate. The difference in result may be explained by the fact that we analyze only large firms' restatements, while the GAO examined all public firms that issued restatements.

The GAO found that, as a general matter, small firms are more likely to restate than are large firms. By contrast, among our sample of larger firms, the largest firms are more likely to restate than are the rest of our sample. It could also be that the ability of client corporations to use promises to give, or threats to withhold, consulting work to achieve bargaining leverage over consulting firms has led to an increase in audit-firm capture by smaller firms. We think that it is more likely that consulting firm revenue bears some relationship to the size of the company receiving such services. If this is true, then large firms would have been more likely to capture their auditors than would smaller firms.

Research in accounting that has found a correlation between firm size and management attempts to manage earnings has been explained on the

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[48]Id. § 201.

basis that large clients simply have more sophisticated accounting departments that are better at financial engineering that presents financial results in ways that are consistent with applicable accounting principles. However, since we are looking at restatements, which reflect accounting errors, and not the results of generic disagreements between auditors and their clients, our findings are not vulnerable to this explanation. Instead, the capture hypothesis seems more consistent with our data set.[49]

C. Accounting Firm Reputation

Our analysis also helps assess whether the large accounting firms differentiate themselves on the basis of performance. Product differentiation is, in theory, important to firms. Even firms that enjoy monopolistic or oligopolistic competitive environments benefit by producing high-quality products because they can charge more for such products. Of course, not all firms seek to distinguish themselves from direct rivals and close substitutes by offering superior-quality products: some compete by offering low-quality products that cost less, and still other firms compete in less scrupulous ways.[50]

Writing about "Enron-style" scandals, for example, Karpoff and Lott argue that the financial value of a law-abiding reputation is better than tougher government regulation in preventing scandals.[51] Karpoff and Lott believe that firms' desire to protect their reputations makes it unnecessary for Congress to pass tougher accounting regulations and reforms. Indeed,

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[49]See Nelson et al., supra note 26; Wright & Wright, supra note 26.

[50]In highly regulated industries, demand for firms' services may be created artificially. For example, companies could once compete for investors by seeking the assistance of auditors and publicizing that assistance. With enactment of the federal securities laws, companies were required to have auditors to fulfill regulatory requirements. These sorts of regulations have the capacity to distort the competition that occurs among auditors.

[51]Jonathan M. Karpoff & John R. Lott, Jr., The Reputational Penalty Firms Bear from Committing Criminal Fraud, 36 J.L. & Econ. 757 (1993). A press release on the University of Washington website indicates that Karpoff and Lott have updated their results after Enron. This press release describes the accounting industry as having incentives to develop reputations for performing high-quality work, "accounting firms will develop stronger reputations for providing honest results to their clients . . . [T]heir reputations will cost more to clients, but some firms will find it worthwhile to pay more because they want to convince investors that their books are not cooked." See <http://www.washington.edu/newsroom/news/2002archive/02-02archive/k022802a.html> (accessed Aug. 8, 2003).

Karpoff and Lott find that increases in criminal penalties for financial fraud may do more harm than good because they tend to squeeze out reputation as a means for reducing the incidence of fraud. Their study presumes that accounting firms can and will differentiate themselves by developing stronger reputations for providing honest results to their clients.

The evidence regarding accounting firm restatement rates implies that, by this measure, one cannot meaningfully distinguish among the largest (Big 5 or Final 4) accounting firms on the basis of the quality of their work. Major accounting firms make an insignificantly different number of errors, as evidenced by restatements. This, in turn, removes one important way in which accounting firms might have distinguished themselves in terms of their reputations. Consistent with this intuition, data from other studies yields no evidence that any of the Big 4 accounting firms is able to charge a "quality premium" over other Big 4 firms for their services. An extensive literature search also turned up no evidence that any Big 4 firm enjoys a higher reputation among consumers than the others. Thus, the evidence that we have seen does not support Karpoff and Lott's conclusions. Although the Big 4 accounting firms may have the *incentives* to distinguish themselves from their rivals that Karpoff and Lott identify, they do not appear to have succeeded in achieving product differentiation in one important area.

A recent GAO study complements our findings regarding the reputations of the Big 4 accounting firms. The study shows that factors such as expertise, global reach, and reputation do not play a role in determining the market shares of accounting firms. Rather, a simple model of pure price competition that does not take these factors into consideration is able to simulate the actual market shares of the Big 4 accounting firms that we observe.[52] In this model, clients choose auditors using price, ignoring factors such as quality or reputation, to assess whether the current high degree of concentration in the market for audit services is necessarily inconsistent with a price-competitive setting.[53] These results are consistent with our findings that audit firms have not succeeded in differentiating their products from those of their competitors. Rather, the results produced by the computer-generated market model "mimicked a process of pure price competition in

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[52]GAO Mandated Study, supra note 24, at 59.

[53]The GAO model is based on the methodology developed by Rajib Doogar & Robert Easley, Concentration Without Differentiation: A New Look at the Determinants of Audit Market Concentration, 25 J. Acct. & Econ. 235–53 (1998).

which firms bid for each client, based on the short-term cost of performing the audit."[54] This result held on simulations in which firms competed for clients from scratch, as well as in simulations in which companies were assigned to their current auditors in order to determine if firms could defend their current market shares based solely on price competition. The model also simulated a situation in which the five largest firms below the Big 4 were combined in order to see if they could compete successfully with the Big 4 for large clients. Interestingly, the model predicted that the new firm that resulted from the merger of the fifth through the ninth largest audit firms would not make significant inroads into the market share of the current Big 4 audit firms.

Our findings are consistent with these results, but they are not consistent with the GAO's 2003 survey of chairpersons of Fortune 500 companies' audit committees. Ninety-one percent of respondents found that the reputation of the audit firm was important (58 percent of respondents found that the reputation of the audit firm was of "very great importance" and 33 percent found that the audit firm's reputation was of "great importance").[55] Interestingly, none of the survey respondents felt that the reputation of the audit firm was of little or no importance: indeed only 9 percent thought that auditor reputation was only moderately important.

Of course it may well be that accounting firms do not compete on the basis of the measure of quality captured here, but instead along some other vector. A recent study of stock options granted to top executives of 224 firms that announced financial restatements due to accounting irregularities during the period January 1997 through June 2002 found that firms that announced large negative restatements had granted about 50 percent more stock options to their top executives in the years prior to the restatement announcement.[56] This study found that firms in the top 20 percent of option grants have twice as many restatements as firms in the bottom 20 percent of firms by option grants. The implication of this study is that private gains in the option portfolios of top managers may have given them incentives to

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[54]GAO Mandated Study, supra note 24, at 58.

[55]Id. at 96.

[56]Simi Kedia & Natasha Burns, Do Executive Stock Options Generate Incentives for Earnings Management? Evidence from Accounting Restatements, March 2003 Harvard Business School working paper.

interpret GAAP aggressively. These executives, in turn, could use their significant leverage over their firms' choice of accounting firms to select an auditor that will comply with management's preference for aggressive/illegal accounting. This would, in turn, lead accounting firms who are unwilling to succumb to managers' preferences for aggressive accounting treatment to lose business to more aggressive rivals. However, our results do not indicate that this "race-to-the-bottom" theory of competition and product differentiation in the accounting industry is any more robust than the "race-to-the-top" theory described above.

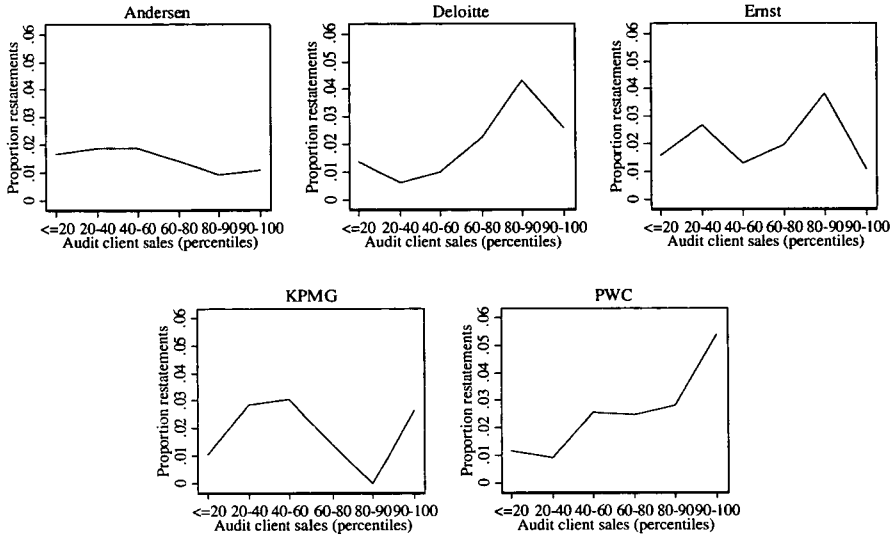
IV. CONCLUSION

Our analysis suggests that the nation's largest accounting firms, which audit virtually all U.S. publicly held companies, have not distinguished themselves from their competitors by the quality of audit services, as measured by restatement rates. It may well be that investment in product differentiation to achieve performance above current levels would entail costs in excess of expected benefits.

In any case, we find that managers of large public companies who want to distinguish themselves from their competitors by choosing a tough, high-quality auditor cannot do so. As measured by financial restatement rates, no such auditor is available: one cannot reject the hypothesis that they all are the same.

APPENDIX—FINANCIAL RESTATEMENT RATES BY YEAR

Large public corporations, 1997–2001, by audit firm



NOTE: The figure's components use client sales percentiles computed from all audit firms' clients. The percentile breakpoints on the x-axes therefore are the same across all firms.

SOURCES: GAO; annual editions of *Who Audits America.*